

Application No.: 10/714,747  
February 1, 2005  
Page 2 of 9

### Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of Claims

1. (Currently amended) An apparatus for measuring acoustic properties of a drumhead of a drum, the apparatus comprising:
  - a) ~~[[an]]~~ a moveable acoustic source positioned relative to the drum to provide acoustic energy to the drumhead; and
  - b) ~~[[an]]~~ a moveable acoustic energy sensor positioned above the drumhead to receive acoustic energy from the drumhead produced from the drumhead at an area in proximity to a tightening bolt of the drum without substantial interference from other tightening bolts of the drum and configured to generate an output corresponding to the acoustic energy received by the acoustic sensor, the output effective in permitting the tuning of each tightening bolt of the drum to be matched to the other tightening bolts of the drum.
2. (Original) The apparatus as recited in claim 1, wherein the acoustic source comprises a speaker to provide acoustic energy to the drumhead.
3. (Original) The apparatus as recited in claim 1, wherein the acoustic energy sensor comprises a microphone.
4. (Original) The apparatus as recited in claim 1, wherein the apparatus comprises a plurality of acoustic sources positioned relative to the acoustic energy sensor to provide acoustic energy to the drumhead and to provide a controlled environment for making local measurements.
5. (Original) The apparatus as recited in claim 4, wherein the acoustic sources comprise a plurality of speakers.

Application No.: 10/714,747  
February 1, 2005  
Page 3 of 9

6. (Original) The apparatus as recited in claim 4, wherein the acoustic energy sensor comprises a microphone.
7. (Original) The apparatus as recited in claim 4, wherein the acoustic energy sensor comprises a plurality of microphones.
8. (Original) The apparatus as recited in claim 4, wherein the plurality of acoustic sources are spaced apart along a circumferential axis of the drumhead and the acoustic sensor is located substantially equidistant from the plurality of acoustic sources along the circumferential axis.
9. (Original) The apparatus as recited in claim 1, wherein the acoustic source comprises a plurality of speakers configured to direct acoustic energy towards the drumhead, wherein the acoustic sensor comprises a microphone located between the plurality of speakers, and further comprising an acoustic energy source coupled to the plurality of speakers, and a meter coupled to the microphone, the meter being configured to provide a measurement of the acoustic properties of the drumhead.
10. (Currently amended) An apparatus for measuring acoustic properties of a drumhead of a drum, the apparatus comprising:
  - [[an]] a moveable energy source positioned relative to the drum to cause the drumhead to vibrate when energy is delivered from the energy source towards the drumhead; and
  - [[an]] a moveable acoustic sensor positioned relative to above the drumhead at an area in proximity to a tightening bolt of the drum to receive acoustic energy therefrom without substantial interference from other tightening bolts of the drum, and coupled to a meter configured to display information corresponding to the acoustic properties of the drumhead and permitting the adjustment of each tightening bolt of the drum to a single resonant frequency.
11. (Original) The apparatus as recited in claim 10, wherein the energy source comprises an acoustic energy source coupled to at least one speaker configured to emit acoustic energy.

Application No.: 10/714,747  
February 1, 2005  
Page 4 of 9

12. (Original) The apparatus as recited in claim 10, wherein the energy source is spaced away from the drumhead.
13. (Original) The apparatus as recited in claim 10, wherein the acoustic sensor comprises a microphone structured to convert acoustic energy into an electrical signal measurable by the meter.
14. (Original) The apparatus as recited in claim 13, wherein the microphone is structured to convert acoustic energy into a voltage having an amplitude, the amplitude of the voltage corresponding to the amplitude of the acoustic energy emitted from the drumhead.
15. (Original) The apparatus as recited in claim 10, wherein the apparatus comprises two energy sources spaced apart by a distance, and wherein the acoustic sensor is positioned between the two energy sources.
16. (Original) The apparatus as recited in claim 15, wherein the two energy sources and the acoustic sensor are located substantially on a single circumferential line positioned between a center of the drumhead and an outer periphery of the drumhead.
17. (Original) The apparatus as recited in claim 16, wherein the drum includes a plurality of tension bolt-lug nut pairs located around a periphery of the drum, and a tension adjusting device located in one of the tension bolt-lug nut pairs, and wherein the acoustic sensor is positioned substantially along a straight line extending from a center point of the drumhead through the tension bolt-lug nut pair containing the tension adjusting device.
18. (Currently amended) A method for measuring the acoustic properties of a drumhead of a drum, comprising:
  - applying energy to a surface of the drumhead to cause the drumhead to emit acoustic energy therefrom;

Application No.: 10/714,747  
February 1, 2005  
Page 5 of 9

receiving acoustic energy emitted from the drumhead using [[an]] moveable acoustic sensor positioned away from above the surface of the drumhead and in proximity to a tightening bolt of the drum without substantial interference from other tightening bolts of the drum; and  
converting the acoustic energy received by the acoustic sensor into a signal corresponding to an acoustic property of the drumhead; and  
adjusting all of the tightening bolts of the drum to a single resonant frequency.

19. (Original) The method as recited in claim 18, wherein the energy applied to the surface of the drumhead comprises acoustic energy emitted from a speaker spaced apart from the surface of the drumhead.

20. (Original) The method as recited in claim 18, wherein the acoustic sensor comprises a microphone, and wherein the acoustic energy received from the microphone is converted into a voltage having an amplitude corresponding to the amplitude of the acoustic energy, and further comprising displaying a value corresponding to the amplitude of the voltage.

21. (Currently amended) An apparatus for measuring acoustic properties of a drumhead of a drum, the apparatus comprising:

[[a]] a moveable loudspeaker positioned relative to the drum to cause the drumhead to vibrate when energy is delivered from the loudspeaker towards the drumhead; and

an electrical energy sensor that detects power delivered to the loudspeaker, is located above the drumhead in proximity to a tightening bolt of the drum to receive acoustic energy therefrom without substantial interference from other tightening bolts of the drum, and is coupled to a meter configured to display information corresponding to the acoustic properties of the drumhead to permit the tuning of each tightening bolt of the drum to be matched to the other tightening bolts of the drum.